EXHIBIT 6

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Sullivan	)	
Reexamination Proceeding	)	
Control No.: 95/000,120	)	Examiner: Michael W. O'Neill
Filed: January 17, 2006	)	Art Unit: 3993
For: U.S. Patent No. 6,210,293	)	

Central Reexamination Unit
571-273-9900

CERTIFICATION UNDER 37 C.F.R. § 1.903

In accordance with the requirements of 37 C.F.R. § 1.903, Patent Owner, Callaway Golf Company ("Callaway Golf"), hereby certifies that service of the accompanying Response to Office Action mailed February 27, 2007, for the above-referenced *inter partes* reexamination proceedings was made by U.S. first class mail on April 27, 2007, to the following attorneys for Acushnet Company:

Alan M. Grimaldi (Reg. No. 26,599)
Joseph P. Lavelle (Reg. No. 31,036)
Andrew R. Sommer (Reg. No. 53,932)
Howrey LLP
1299 Pennsylvania Avenue, N.W.
Washington, D.C. 20004

The Director is authorized to charge any fees or credit any overpayments to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 4/27/07

Dorothy P. Whelan (Reg. No. 33,814)
J. Patrick Finn III (Reg. No. 44,109)

Fish & Richardson P.C., P.A.
60 South Sixth Street, Suite 3300
Minneapolis, MN 55402
Telephone: (612) 335-5070
Facsimile: (612) 288-9696
60425559.doc

CERTIFICATE OF MAILING BY EXPRESS MAIL

Express Mail Label No. EV468465860US

April 27, 2007
Date of Deposit

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Sullivan	)	
Reexamination Proceeding	)	
Control No.: 95/000,120	)	Examiner: Michael W. O'Neill
Filed: January 17, 2006	)	Art Unit: 3993
For: U.S. Patent No. 6,210,293	)	

Central Reexamination Unit
571-273-9900

RESPONSE TO OFFICE ACTION MAILED FEBRUARY 27, 2007

Claims 1-8 of U.S. Patent No. 6,210,293 ("the '293 patent") stand rejected under 35 U.S.C. § 103 on a number of grounds. In this Response, the Patent Owner, Callaway Golf Company ("Callaway Golf"), will demonstrate why the claimed subject matter would not have been obvious based upon the cited prior art references. We first will place the claimed invention in context by describing how various features of a golf ball, including the materials used in its construction, influence golf ball performance. An understanding of the features that influence golf ball performance is critical in this case because it belies the fundamental belief upon which the current rejections are based, i.e. that various materials may be easily substituted for one another with predictable results. This simply is not the case. We will also include a brief history of golf ball development and innovation that will demonstrate how the claimed golf balls represented a revolutionary improvement in golf ball performance—truly a paradigm shift that established a new standard for ensuing golf ball designs. Against this backdrop, we will turn to the individual rejections and demonstrate why each is contrary to both fact and the law governing obviousness, thereby requiring withdrawal of the rejections and issuance of a certificate confirming patentability.

CERTIFICATE OF MAILING BY EXPRESS MAIL

Express Mail Label No. EV468465860US

April 27, 2007
Date of Deposit

BACKGROUND

A search of the USPTO database for patents with the term "golf ball" in the abstract returns over 4000 patents issued since 1976. Each describes a ball that, like any patentable invention, is a combination of known materials. Golf ball designers, like inventors in many fields, typically do not set out to develop their inventions from previously unknown components; inevitably, every new golf ball design will have certain aspects in common with its predecessors.

It is, however, by no means impossible or trivial to design a novel and non-obvious golf ball. Indeed, Acushnet, the third-party requestor of this reexamination, itself holds almost 500 patents on golf balls. Acushnet, like every other manufacturer of golf balls, devotes considerable resources to the research and development of new ball designs, knowing that improvements on this centuries-old technology may not only prove patentable but also immensely profitable.[1]

---

[1] Acushnet's patents, and the arguments used to procure those patents, are instructive in the context of the present case. Although Acushnet, in its reexamination request, alleges that it would have been a routine matter to develop the technology claimed in the '293 patent, it said just the opposite when seeking—and receiving—its own, later-filed patents on substantially the same technology. In particular, disclosures that Acushnet made in those patents (Hebert, U.S. Patent No. 5,885,172 and its progeny) flatly contradict many of the arguments it urged in its reexamination request, and which the Examiner has adopted. For example, the '172 patent states:

> The thickness of the outer cover layer is critical to the "progressive performance" of the golf balls of the present invention. If the outer cover layer is too thick, this cover layer will contribute to the in-flight characteristics related to the overall construction of the ball and not the cover surface properties. However, if the outer cover layer is too thin, it will not be durable enough to withstand repeated impacts by the golfer's clubs.

'172 patent, col. 4, ll. 42-49. A copy of the '172 patent is included as Exhibit A.

Additionally, statements Acushnet made during prosecution of the '172 patent emphasize the critical role that the outer cover thickness plays in golf ball performance:

> The presently claimed golf ball has a thin layer of castable material disposed about an inner layer and a core. One result of using a thin outer cover layer is that the initial velocity of the ball upon impact is not substantially decreased and driver spin remains low. However, the outer cover material allows for high spin and feel characteristics similar to that of a traditional soft covered wound ball when struck with a club with a low head speed and high loft angle. Thus, the presently claimed golf ball provides the "best of both worlds" in the golf ball art by having the characteristics of a maximum distance ball during long shots and high spin and controllability during short shots.

Acushnet's Office Action Response from '172 prosecution history (Exhibit B hereto) at 4.

Composition, Hardness, and Thickness Affect Ball Performance

In the Office Action, the Examiner relies heavily on the abstract of a 1994 article by Michael Sullivan, the inventor of the '293 patent,[2] which he characterizes as an admission from the inventor to the effect that "golf ball designers knew that the mechanical properties of the materials used as a golf-ball cover layer were more critical to golf ball performance than the actual materials themselves."[3] In other words, persons of ordinary skill would have appreciated how to select materials for the various layers in a golf ball having a multi-layer cover based simply upon the mechanical properties of the materials because the chemical composition of the material is not critical to the ball's performance. The Examiner thus implies that the mechanical properties of materials used in a golf ball are somehow independent of the materials themselves. That is untrue, and certainly not what Mr. Sullivan meant in the 1994 article. The chemical composition of the materials in a golf ball is far from irrelevant to a golf ball's performance; to a large extent, material choice is *determinative* of a golf ball's performance. Mr. Sullivan admitted this during his deposition taken in connection with ongoing litigation involving the '873 patent.[4]

One cannot simply substitute one cover material for another without expecting a change in performance, because the performance depends on what the cover material is. Moreover, because even subtle changes in polymer chemistry or processing often result in dramatically different results, golf ball design requires exhaustive experimentation with different cover compositions, different cover thicknesses, and different cover hardnesses.[5] For example, Dennis Nesbitt, the inventor of the '193 patent upon which the Examiner bases a number of rejections in the present Office Action, testified:

> Q. In your experience as a golf ball designer of the years, have you found that golf ball design is a predictable employ?

---

[2] Sullivan and Melvin, "The Relationship Between Golf Ball Construction and Performance" (1994) (cited in the Office Action as Exhibit G).
[3] Office Action, p. 17. See also pp. 19, 23-24, 32, 36, 56, 61-62, 72, 77, 103-104, 115, and 120.
[4] Sullivan Deposition, p. 245, l. 9 to p. 245, l. 13; p. 246, l. 1 to p. 248, l. 9 (Exhibit C).
[5] Wilkes Declaration, ¶¶ 5-10 (Exhibit D).

A. Never predictable, no. You don't know until you try. [6]

Acushnet itself has admitted as much. For example, in one of its own patents (Jordan, Dalton, and Cavallaro, U.S. Patent No. 6,634,964), Acushnet asserted:

> Finding the right combination of core and layer materials and construction to produce a golf ball suited for a predetermined set of performance criteria, in particular, increased resilience and, therefore, velocity, without a loss in "feel" is a task that is challenging.[7]

If golf ball design were a simple matter of determining the optimal properties for a ball, and then choosing materials that are purported to possess these properties, research in this area would have ground to a halt years ago—and clearly, it has not. Consider, for example, inventor Sullivan's own career. Although Mr. Sullivan has been at the forefront of golf ball development for more than 25 years, during which time he has been awarded more than 320 patents, and despite the success of his inventions in the marketplace as well as in the Patent Office, Mr. Sullivan is still hard at work on new golf ball technology. Ironically, Mr. Sullivan now performs this research as an employee of Acushnet, who in the thirteen months since filing this *inter partes* reexamination request has obtained more than 30 patents based on Mr. Sullivan's work.

Golf Ball History

The problem inventor Sullivan addresses in the '293 patent family[8] is that, traditionally, golf ball design had always involved some trade-off whereby one performance factor—distance, durability, spin rates, "click," or "feel"—had to be sacrificed for the sake of another. As everyone in the field realized, one could not hope to create a ball that performed well in all respects simply by incorporating elements from balls that performed well in some of those respects, because some choices would be mutually exclusive. For example, it was well-known that Surlyn ionomer covers made for good distance, and balata covers made for good feel, but it was equally well-known that no single cover material offered both properties.

---

[6] Nesbitt Deposition, p. 237, ll. 14-18 (Exhibit E). See also p. 237, l. 19 to p. 238, l. 21.
[7] U.S. Patent No. 6,634,964, col. 1, l. 67 to col. 2, l. 41. A copy of the '964 patent is included as Exhibit F.
[8] The '293 patent is a member of a patent family that includes U.S. Patent Nos. 6,595,873; 6,503,156; and 6,506,130.

The ball that Dennis Nesbitt patented in 1984[9] attempted to solve this problem by using two covers, an inner layer and an outer layer, of differing ionomer compositions. While the golf club would directly contact only the outermost layer, Nesbitt hoped that if the outer layer were thin enough, the properties of the inner cover layer might, on some kinds of shots, predominate over the properties of the outer cover layer.

While Nesbitt's dual-ionomer ball introduced new possibilities to golf ball design, it also introduced a new set of problems. It was far from simple to predict how two adjacent covers of differing compositions would affect each other's physical properties; for example, when measured on the ball, the hardness of a thin outer layer was affected by the hardness of the cover layer immediately beneath it. It was equally unclear what hardness and thickness parameters could achieve the effect whereby one cover layer's properties would dominate over the properties of the other layer. Additionally, designers were constrained by commercial considerations like durability—some covers, when applied in thin layers, scuffed and cut too easily to be played for more than a few holes, or a few shots. There was also a problem relating to manufacturability, particularly on a commercial scale.

Because of the unpredictability characteristic of multi-layer ball performance, manufacturers had a hard time utilizing Nesbitt's design to achieve performance much beyond that of a traditional single-cover ball. In 2000, 16 years after Nesbitt's seminal patent issued, the vast majority of PGA Tour pros still played balls that incorporated a single layer, synthetic balata cover over a core of elastic windings.

The state of the golf ball art changed practically overnight when Callaway Golf launched the Rule 35 golf ball in January 2000, followed by Acushnet's launch of the Titleist Pro V1 golf ball in October 2000.[10] The Rule 35 and Titleist Pro V1 golf balls are multi-layer designs incorporating a polyurethane outer cover and ionomer inner cover over a large solid core. Annika Sorenstam used the Rule 35 golf ball to shoot "the first 59 in the history of women's golf and set LPGA scoring records for 36, 54 and 72 holes."[11] After using the Pro V1 to win the 2000 PGA Tour Championship, Phil

---

[9] Nesbitt, U.S. Patent No. 4,431,193, upon which the Examiner bases a number of rejections in the present Office Action.
[10] Yagley Declaration (Exhibit G).
[11] "Golf Plus The Maters," *Sports Illustrated* (Apr. 16, 2001) (Exhibit H).

Mickelson held the ball aloft before the cameras, giving it the credit for his victory. Mickelson dubbed this ball the "Tour Perfect."[12] The Pro V1, he said, is "the best golf ball that's ever been created."[13]

A year later, the wound-core balata-covered ball had virtually vanished from the Tour. Acushnet sold astonishing quantities of the Pro V1, even at the breathtaking price of $5 per ball.[14]

The Pro V1 ball embodies technology falling within the claims of Callaway Golf's '293 patent. For a number of years, Acushnet has tried to obtain a license under the '293 patent. When licensing negotiations broke down, and patent litigation between the companies was inevitable, Acushnet belatedly filed the present request for *inter partes* reexamination of the '293 patent.

Unexpected Results and Commercial Success

The claimed invention has effected a profound change not only on the market for golf balls, but on the sport of golf itself. The Rule 35 and Titleist Pro V1 golf balls, which incorporate the technology of the '293 patent family, has, in the words of scores of tour players and reviewers, literally revolutionized the game. Arnold Palmer has declared that "I believe the 'Rule 35' golf ball reflects a real beneficial breakthrough in golf ball technology."[15] Tour champion Phil Mickelson has declared that the Pro V1 has had "a greater impact on golf than when steel replaced hickory in club shafts."[16] Golf course architects despair that the new breed of "outrageously long" golf balls has created a need for longer golf courses.[17]

---

[12] J. Potter, "New-Generation Ball Shaking Golf to the Core," *USA Today* (Mar. 14, 2001) (available at http://www.usatoday.com/sports/golf/pga/2001-03-14-ball.htm; Exhibit I).
[13] J. Diaz, "Right on the Seam – Titleist Pro V1 Golf Ball," *Golf Digest* (Aug. 2001) (available at http://www.findarticles.com/p/articles/mi_m0HFI/is_8_52/ai_76167194; Exhibit J).
[14] *See, e.g.*, "Titleist Introduces New Pro V1 and New Pro V1x Golf Balls" (Mar. 5, 2003 press release; Exhibit K) (stating retail price of $56 per dozen).
[15] "Arnold Palmer 'Rule 35' is fit for The King," The Calloway Connection, No. 39 (Fall 2000) (Exhibit L).
[16] "Southland Slices," *Golf Today Magazine* (Nov. 2004) (available from http://www.golftodaymagazine.com/0411Nov/southlan.htm) (Exhibit M)
[17] Geoff Shackleford, quoted in A. Brumer, *Guide to the Golf Revolution* (2003) at 89 (Exhibit N).

Moreover, as Acushnet often proclaims, the Pro V1 is "the most successful golf ball in the history of the golf industry . . . ."[18] Sales of the Pro V1 and the similar Pro V1x have surpassed one billion dollars. While this measure of commercial success would be significant in any context, it has been particularly important to Acushnet—in 2002, Acushnet's CEO admitted that "The Pro V1 saved this company."[19]

As with many patented inventions, it is true that individual elements of the patented design had been known in the art for decades before Mr. Sullivan combined them in his invention. However, even with knowledge of these materials, their physical properties, and their applicability to ball manufacture, expert designers throughout the industry failed to successfully produce that combination. In fact, Mr. Nesbitt tried to make a golf ball having an ionomeric inner cover layer and a polyurethane outer cover layer, but completely dropped the project because of the golf ball's disappointing properties and adhesion.[20] Twenty years later, Mr. Nesbitt tried to make another golf ball having an ionomeric inner cover layer and a polyurethane outer cover layer, but once again was unsuccessful.[21]

Mr. Sullivan's invention is a classic example of unexpected results, and why inventions that generate them deserve patent protection—in a case where those of skill in the art, for at least ten years, failed to appreciate that combining known materials in a certain way would result in the "best ball ever" and a billion dollars in revenues, the "unexpected results" test overwhelmingly favors a finding of patentability.

The reason for the phenomenal success of Mr. Sullivan's patented technology is the performance advantage it offers over the prior art. There are two fundamental problems in golf ball design: "distance" and "feel." A golfer teeing off with a driver wants the ball to go as far as possible. Conversely, on short shots near the green where maximum distance is unimportant, a golfer benefits from the ability to finesse the ball by imparting spin to it. Distance balls are typically hard. Balls with superior "feel" are typically soft. Thus, as Mr. Sullivan acknowledged in the '293 patent, the long-standing

---

[18] Steve Pike, "News: Acushnet Updates Titleist Pro V1 Line," The Golf Gazette, The News Leader in the Clubhouse (Exhibit O).
[19] A. Nicodemus, "Economy Hits Golf Industry," *The Standard-Times* (New Bedford, Massachusetts, July 21, 2002) (available from http://www.southcoasttoday.com/daily/07-02/07-21-02/a01lo006.htm; Exhibit P).
[20] Nesbitt Deposition, p. 94, l. 14 to p. 103, l. 17 (Exhibit E).
[21] Nesbitt Deposition, p. 248, l. 22 to p. 249, l. 15 (Exhibit E).

problem in golf ball design is how to create a ball hard enough for good distance but soft enough to offer good feel. The prior art is littered with balls that have one of these properties but not the other: ionomer-covered solid-core balls that have great distance, but no feel, and balata-covered wound-core balls that have superior feel, but relatively poor distance.[22] Moreover, any commercially viable ball must be durable enough to withstand repeated high-speed impacts with grooved metal clubfaces.

In the prior art, it was generally known that the "hardness" or "softness" of a ball was influenced both by the material used to cover the golf ball and the thickness of that cover. It was also appreciated that balls could be made with multiple cover layers, but those known at the time had very soft ionomer covers that, as Mr. Sullivan described in the '293 patent, suffered from poor durability.[23] Through his experimentation, Mr. Sullivan found that certain thicknesses of soft polyurethane applied over inner covers made of certain ionomer formulations resulted in balls with a dual personality—on tee shots, the properties of the hard ionomer inner cover dominated, providing good distance, while on short approach shots, the properties of the soft polyurethane outer cover allowed the ball to spin in a controllable way.[24]

This dual personality of Sullivan's invention is precisely the characteristic that has earned the Rule 35 and Titleist Pro V1 golf balls high praise from Tour players:[25]

> "The Callaway Golf ball [Rule 35] comes closer to giving me complete performance satisfaction than any other ball I have played, and it does help me enjoy the game more."
> – Arnold Palmer
>
> "The Pro V1 is great. The ball goes farther and I spin the ball better."
> – Ernie Els
>
> "The Titleist Pro V1x gives me more control and feel around the greens. Ball flight, extra distance, and more control is a pretty good package." – Davis Love III

[22] *See* the '873 patent, col. 1, l. 26 to col. 3, l. 20.
[23] *See* the '873 patent, col. 3, ll. 11-29.
[24] *See* the '873 patent, col. 3, l. 36 to col. 5, l. 31.
[25] "Arnold Palmer 'Rule 35' is fit for The King," The Calloway Connection, No. 39 (Fall 2000) (Exhibit L); "Word of Mouth on the New Titleist Ball Isn't Just Positive, It's Deafening" (2001 Titleist advertisement (Exhibit Q); and "There's That Buzzing Sound Again" 2003 Titleist advertisement (Exhibit R).

> "It flies higher. It flies farther. It stops on the green. It does everything you want a golf ball to do." – Vijay Singh
>
> "The ball goes forever. And you can stop the ball, you can spin the ball. It's pretty much what everyone is looking for." – Vijay Singh
>
> "It's made a big difference in my game. Around the greens, it's phenomenal. I'm able to spin the ball a lot more than I've ever been able to before." – Steve Stricker
>
> "With the Pro V1, I'm definitely longer off the tee, but I'm not giving up anything in terms of control. It feels soft, and there's plenty of spin around the green." – Lee Westwood

Indeed, when Acushnet's own golf ball designers began testing a prototype urethane-over-ionomer golf ball—more than three years after Mr. Sullivan filed his first patent application on that technology—the Acushnet designers marveled at the balls' superior performance and quickly sought the attention of Acushnet's patent prosecution counsel.[26]

The unexpected and overwhelming success of Mr. Sullivan's golf ball technology thus demonstrates that his invention was not simply the predictable result of combining known materials, but in fact represented the best solution ever conceived for the distance-versus-control problem. That is why, over six years after introducing the Pro V1 ball, and despite the cost and distraction associated with defending a major patent infringement suit seeking millions of dollars in damages, Acushnet—the dominant player in the golf ball market—still practices the invention claimed in Mr. Sullivan's '293 patent

---

[26] E-mail from Ed Hebert, included as Exhibit B to the Rule 131 Declaration of William E. Morgan submitted during prosecution of U.S. Patent No. 6,749,789 (Dec. 12, 2003). (The Morgan declaration, and its exhibits, are attached hereto as Exhibit S). The prototypes exhibited an effect Acushnet has dubbed, in its Pro V1 patents, "progressive performance":

> [A]s used herein, the term "progressive performance" means that the presently claimed golf ball has the distance benefits of a traditional hard covered two piece ball when struck with a club having a high club head speed and a low loft angle, but also the high spin and feel characteristics similar to that of a traditional soft covered wound ball when struck with a club having a low head speed and high loft angle. Thus, golf balls of the presently claimed construction provide the "best of both worlds" in the golf ball art, i.e., a maximum distance ball for long shots (e.g., with a driver) which has high spin and controllability for short shots (e.g., with a wedge).

'172 patent (Exhibit A), col. 4, ll. 5-28.

family. As Acushnet's actions demonstrate, Mr. Sullivan invented a unique and unobvious golf ball that deserves patent protection.

THE OUTSTANDING REJECTIONS

The '293 patent contains 8 claims, each directed towards a golf ball. Each covers a ball having a core, an inner cover layer, and an outer cover layer. The inner cover layer includes at least one low acid ionomer (i.e., an ionomer that contains no more than 16% by weight of an alpha, beta-unsaturated carboxylic acid) and has a Shore D hardness, measured on the ball, of at least 60. The outer cover layer includes a polyurethane and has a Shore D hardness, measured on the ball, of 64 or less. It is this particular combination of features, and the synergistic way in which they interact with each other, that gives rise to the surprisingly enhanced performance observed in the case of the Pro V1 balls, which fall within the claims, and their attendant commercial success.

The importance of the interactions among the various layers is reflected in the fact that the claims require the Shore D hardness of the layer to be measured on the ball. "Shore D" is a scale for assessing the hardness of a particular material. It is possible to measure it on a plaque of material. For example, the test method set forth in ASTM D-2240 requires measuring the Shore D hardness of a material using a 0.25 inch thick plaque of the material. This is how manufacturers of polymer resins such as polyurethanes measure and report values of Shore D hardness.[27] However, the Shore D hardness of a material measured on a plaque is not the same as the Shore D hardness of a golf ball cover layer measured on the ball, nor is there any simple correlation between the two values. This is because underlying materials influence the Shore D hardness of an overlying layer when measured on the ball. This is particularly true where, as in the claimed balls, a thin and soft outer layer overlies a harder inner layer. In that case, the thin, soft layer is made harder because it is supported by the underlying hard layer. For example, as demonstrated in the '293 patent, Iotek 959 material has a Shore D of 66, while Iotek 960 material has a Shore D of 57.[28] When used to construct an outer layer of a golf ball, a 50/50 blend of Iotek 959 and Iotek 960 produced golf balls having an outer

[27] See, e.g., the '293 patent, col. 12, l. 66 to col. 13, l. 20, reporting data on Estane® X-4517 polyurethane resin from the manufacturer.
[28] The '293 patent, col. 20, l. 60 to col. 21, l. 16.

layer Shore D value of 73 as measured on the ball, not a Shore D value of approximately 61 that one might expect.[29] Thus, Shore D values measured on a plaque of material are different from, and not predictive of, Shore D values of a golf ball layer measured on the ball.[30]

The claims require the Shore D hardness of the layer to be measured on the ball. In this regard, note that the claims refer to a "layer," and then to the Shore D hardness of the "layer," as opposed to the Shore D hardness of a resin used to make the layer. This usage is consistent with the way in which hardness values are measured in the field of golf ball design and manufacture.[31] Specifically, persons skilled in the field of golf ball design and manufacture all recognize that in the case of multi-piece golf balls, the Shore D hardness of a layer represents the value measured on the ball, as opposed to a separate plaque of material. For example, the Sullivan article published in 1994 and entitled "The Relationship Between Golf Ball Construction and Performance," upon which the Examiner relies heavily in the Office Action,[32] states:

> Shore Hardness was measured in general accordance with ASTM Test D-2240, measured on the parting line of a fixtured, finished ball.[33]

The '293 patent adopts the same protocol—i.e., it adapts the ASTM D-2240 test to enable Shore D hardness to be measured on the ball, as opposed to on a plaque.

Molitor et al. U.S. Patent No. 4,674,751 ("Molitor '751"), which is one of the secondary references that the Examiner uses in the outstanding obviousness rejections, likewise measures Shore hardness on the ball. For example, a Table at columns 7-8 of the patent contains a section called "Finished Ball Data." Hardness data is reported under this heading. Thus, hardness measurements necessarily are made on the ball, as opposed to on a plaque, as would be the case in the values reported in a manufacturer's commercial literature.[34]

---

[29] Sample #9 and Sample #10 of Table 7 of the '293 patent, col. 19-20.
[30] See also Sullivan Deposition, p. 70, l. 25 to p. 71, l. 23 (Exhibit C); Wu Deposition, p. 58, l. 19 to p. 60, l. 25 (Exhibit T); Nesbitt Deposition, p. 120, l. 14 to p. 121, l. 6 (Exhibit E); Dalton Deposition, p. 59, l. 7 to p. 61, l. 2, and p. 93 l. 22 to p. 95, l. 15 (Exhibit U).
[31] See also Binette Declaration (Exhibit V).
[32] This paper is designated Exhibit G throughout the Office Action. The Examiner relies upon it as allegedly containing "admissions" by inventor Sullivan.
[33] Sullivan article, p. 335.
[34] The Molitor '751 patent, like the data in Tables 5, 6A, 6B, and 9 of the '293 patent, reports Shore C, rather than Shore D, data. As explained in greater detail below, Shore C and Shore D represent different

One of Acushnet's own patents (U.S. Patent No. 6,849,006) provides further evidence that Shore hardness measured on a plaque is different from Shore hardness measured on the ball, and that persons of ordinary skill measure Shore hardness on the ball. The '006 patent states:

> It should be understood, especially to one of ordinary skill in the art, that there is a fundamental difference between "material hardness" and "hardness, as measured directly on a golf ball." Material hardness is defined by the procedure set forth in ASTM-D2240 and generally involves measuring the hardness of a flat "slab" or "button" formed of the material of which the hardness is to be measured. Hardness, when measured directly on a golf ball (or other spherical surface) is a completely different measurement and, therefore, results in a different hardness value. This difference results from a number of factors including, but not limited to, ball construction (i.e., core type, number of core and/or cover layers, etc.), ball (or sphere) diameter, and the material composition of adjacent layers. It should also be understood that the two measurement techniques are not linearly related and, therefore, one hardness value cannot easily be correlated to the other.[35]

The requirement in claims 1-8 that Shore D hardness of a layer be measured on the ball, as opposed to on a separate plaque, plays an important role in our analysis that follows. This is because none of the cited prior art discloses Shore D values measured on the ball, as each claim of the '293 patent requires.[36]

The outstanding rejections under 35 U.S.C. § 103 are based upon two primary references: (1) Nesbitt, U.S. Patent No. 4,431,193 ("Nesbitt") and (2) Proudfit, U.S. Patent No. 5,314,187 ("Proudfit"). Both describe balls featuring a core, an inner cover layer, and an outer cover layer. In Nesbitt's case, the inner and outer cover layers are made of ionomer resins. In Proudfit's case, the inner cover layer is an ionomer resin, and the outer cover layer is balata, or a balata blend. Neither describes the use of a thin, soft polyurethane layer as the outer cover layer. The Examiner relies on a number of secondary references (Molitor, U.S. Patent No. 4,274,637 ("Molitor '637"), Wu, U.S.

---

hardness scales. However, the Molitor '751 patent and the '293 patent require all hardness measurements, whether they be Shore C or Shore D, to be made on the ball.

[35] The '006 patent, col. 9, l. 63 to col. 10, l. 12. A copy of the '006 patent is included as Exhibit W. See also Hebert Deposition, p. 240, l. 19 to p. 242, l. 5 (Mr. Hebert testified that he agrees with this paragraph; Exhibit X).

[36] Although Molitor '751 measures Shore hardness on the ball, he measures Shore C hardness, rather than Shore D hardness, as the '293 claims require. As discussed in detail, below, there is no simple correlation between Shore C and Shore D hardness.

Patent No. 5,334,673 ("Wu"), and Molitor '751) to supply this missing piece, as well as other missing pieces. Before turning to the individual rejections, a few words are in order regarding the Examiner's assumptions and methodology, both of which are flawed.

The Examiner's position is that mechanical properties, not chemical composition, determine golf ball performance, relying for support on the Sullivan paper discussed above. These properties include thickness, Shore D hardness, and flex modulus. He then reasons that as long as two materials have similar properties, albeit in isolation, they can be substituted for one another—in other words, if the substitution could be made, it would have been obvious to make it. He then proceeds to take each element in the '293 claims and match it up with values set forth in one of the primary references. If he cannot find the corresponding value in the primary reference, he locates it in one of the secondary references, and plugs it in. After selectively picking and choosing from among the primary and secondary references, he eventually arrives at a construction that allegedly includes each element of the '293 claims.

We will demonstrate below that a fundamental flaw with the Examiner's approach is that the references do not, in fact, describe the properties and features he says that they describe. Shore D hardness is a good example. While the references and manufacturer's literature may describe Shore D hardness values for a material measured in isolation on a plaque, none describes the Shore D hardness that would be measured on the surface of a golf ball layer made of that material, immediately under which lies a relatively hard, low-acid ionomer layer, as the '293 claims require.

In other cases, the Examiner relies on Acushnet's description of commercial balls that allegedly are "covered by" the claims of one of the prior art patents, and concludes that such balls are representative of what the patent describes. Of course, what a patent describes and what its claims cover are two different things. Claims are often broader than the embodiments described in the patent.[37] Accordingly, it is not appropriate to rely upon the properties of a commercial ball as evidence of what a patent describes. It is the latter that is relevant for obviousness purposes.

---

[37] *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1344 (Fed. Cir. 2001) (emphasizing that the scope of a claim term often covers more than the embodiments disclosed in the specification: "As we noted long ago: 'Specifications teach. Claims claim.'" (quoting *SRI Int'l v. Matsushita Elec. Corp. of America*, 775 F.2d 1107, 1121 n. 14 (Fed. Cir. 1985)).

The failure to prove that the prior art references, alone or in combination, contain each element of the '293 claims is sufficient, in and of itself, to compel withdrawal of the rejections. However, even more fundamentally, the Examiner's methodology in stitching these references together is contrary to the law governing obviousness. The law is clear: the fact that a combination could have been made does not mean that it would have been obvious to make it, absent some reason to make the combination in the first place.[38] Here, there is no reason other than hindsight.[39] In fact, the Examiner's stated premise underlying the combinations he devises—i.e. that properties, not composition, matter—would provide a disincentive for making the proposed combinations. This is because under the Examiner's reasoning, a person of ordinary skill would expect the performance of the combined construction to be no different from that of the original construction described in the primary reference. If that were the case, why bother to make the combination at all? Moreover, the claimed balls in fact achieved performance levels that set new standards for golf ball performance—a result that cannot be explained by the simple substitutions that the Examiner proposes.[40]

We turn now to the individual rejections.

---

[38] *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) (holding that the USPTO failed to establish a *prima facie* case of obviousness; "The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.").

[39] *See In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999):

> Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability—the essence of hindsight.

[40] *See In re Soni*, 54 F.3d 746, 750-51 (Fed. Cir. 1995):

> One way for a patent applicant to rebut a *prima facie* case of obviousness is to make a showing of "unexpected results," i.e., to show that the claimed invention exhibits some superior property or advantage that a person of ordinary skill would have found surprising or unexpected. The basic principle behind this rule is straightforward—that which would have been surprising to a person of ordinary skill in a particular art would not have been obvious. The principle applies most often to the less predictable field, such as chemistry, where minor changes in a product or process may yield substantially different results.
>
> * * *
>
> [W]hen an applicant demonstrates *substantially* improved results, as Soni did here, and *states* that the results were unexpected, this should suffice to establish unexpected results *in the absence of* evidence to the contrary.

Rejections Based Upon Nesbitt

Claims 1-8 stand rejected under 35 U.S.C. § 103 over Nesbitt in combination with (a) Molitor '637, (b) Wu, or (c) Molitor '751.

Nesbitt Plus Molitor '637

In the Office Action, the Examiner alleges that Nesbitt describes each element of claims 1-8 with the exception of (a) an inner layer that includes a low acid ionomer and (b) an outer layer that includes a polyurethane having a Shore D hardness of 64 or less. To address these deficiencies, the Examiner relies upon Molitor '637. Specifically, in the case of the outer layer, he takes the thickness range that Nesbitt discloses for ionomer resins (0.02 inches to 0.100 inches) and simply substitutes polyurethane for the ionomer resin, while retaining the ionomer resin layer thickness. For the Shore D hardness value, he relies upon commercial literature for ESTANE 58133 polyurethane (Exhibit J in the Office Action), which reports a Shore D hardness value measured in isolation on a plaque.

The rejection is factually and legally flawed for at least the following reasons.

Nesbitt describes golf balls having an all-ionomer, 2-layer cover. Nesbitt's entire focus is on the use of ionomer resins in both cover layers. It is in this context that Nesbitt refers to Molitor '637:

> This center or core 12 and inner layer 14 of hard resinous material in the form of a sphere is then remolded into a dimpled golf ball of a diameter of 1.680 inches minimum with an outer or cover layer 16 of a soft, low flexural modulus resin such as Surlyn type 1655. The outer layer of the soft resin is of a thickness of 0.0575 inches. This soft Surlyn resin cover would have about the same thickness and shore hardness of a balata covered golf ball and would have the advantageous "feel" and playing characteristics of a balata covered golf ball.
>
> * * *
>
> The inner, intermediate, or first layer or ply 14 and the outer cover, second layer or ply 16 or either of the two layers may be cellular when formed of a foamed natural or synthetic polymeric material. Polymeric materials are preferably such as ionomer resins which are foamable. Reference is made to the application Ser. No. 155,658 of Robert P. Molitor issued into U.S. Pat. No. 4,274,637 which describes a number of foamable compositions of

> a character which may be employed for one or both layers 14 and 16 for the golf ball of this invention.[41]

In other words, Nesbitt is saying to use ionomers, preferably foamable ionomers, and that Molitor '637 discloses specific examples of suitable foamable ionomer resins. It is true that Molitor '637 also discloses examples of non-ionomeric resins, including polyurethanes, for use as the sole cover layer of a golf ball. However, Nesbitt's citing of Molitor '637 for examples of ionomer resins is tantamount to teaching away from using any of Molitor 637's non-ionomeric resins, including polyurethanes, for use as the cover layer of a 2-layer cover.[42] Mr. Nesbitt himself agrees. During his deposition, he testified:

> Q. In your 193 patent Mr. Rosenthal earlier referenced you a paragraph that talked about the Molitor patent. Do you remember that?
>
> A. I remember that.
>
> Q. If somebody read that to themselves and said to you, "Oh, you must have been referring to polyurethane as a potential outer cover material," what would you say to that?
>
> A. No way.[43]

It is improper, as a matter of law, to ignore what Nesbitt teaches with respect to suitable resins and proceed to make the proposed combination anyway. This sort of hindsight analysis cannot support obviousness.[44]

---

[41] Nesbitt, col. 3, ll. 34-44 and 51-61.

[42] *See Tec-Air, Inc. v. Denso Mfg., Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999) (quoting *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994)) ("'A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant ... [or] if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant.'").

[43] Nesbitt Deposition, p. 235, ll. 13-21 (Exhibit E).

[44] *See Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 448 (Fed. Cir. 1986), quoting *In re Wesslau*, 353 F.2d 238, 241 (C.C.P.A. 1965):

> It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art.

The incompatibility of Nesbitt and Molitor '637 with respect to polyurethanes is further apparent when one compares what Nesbitt and Molitor '637 teach regarding the layer thickness. Nesbitt states that the thickness of the outer ionomer layer of his 2-layer cover ranges from 0.020 inches to 0.100 inches. Molitor '637, however, teaches that cover layers having thicknesses less than 0.06 inches cannot be manufactured, and that preferred thickness values are on the order of 0.090 inches and higher:

> Generally, it could be said that the cover thickness should not decrease to a point beyond which functional foaming is impossible. While full parameters of the cover thickness have not been explored, it generally appears as though functional foaming cannot be achieved, when the cover is injection molded onto the center, if the cover thickness decreases below 0.060".
>
> It is within the realm of the invention to utilize covers thicker than the above mentioned standard of approximately 0.090". Thicker covers in accordance with this embodiment can be from about 0.090" to about 0.125". Naturally, when thicker covers are utilized, the center diameter is reduced accordingly.[45]

Claims 1, 2, and 5 of the '293 patent require the thickness of the outer polyurethane cover layer to range from 0.010 to 0.070 inches. Claims 3 and 6 require the thickness to be 0.055 inches. The Examiner acknowledges in the Office Action that layer thickness is an important parameter with respect to golf ball performance.[46] In the case of claims 1, 2, and 5, almost the entire range, however, is below the minimum thickness value that Molitor '637 teaches is even possible, and the entire range is well below the ranges that Molitor '637 teaches as being preferable. The situation is even more pronounced in the case of claims 3 and 6, both of which require thickness values (0.055 inches) that are below the minimum value that Molitor '637 says is possible (0.060 inches).

A reference is available for all it teaches, including portions that teach away from the claimed invention. It is inappropriate to pick and choose from among elements disclosed in multiple prior art references and assemble them mechanically, under the guise of obviousness, while ignoring what the references themselves teach about those

[45] Molitor '637, col. 5, lines 1-13.
[46] See, e.g. Office Action at pp. 22-24, 61-62, and 102-104.

elements.[47] The combination of Nesbitt and Molitor '637 that the Examiner proposes, whereby he takes Nesbitt's thickness range for an ionomer layer (because it is similar to the range set forth in claims 1-3 and 5-6 of the '293 patent) and substitutes Molitor 637's polyurethane for the ionomer (because the '293 claims require polyurethane), while retaining Nesbitt's thickness value, completely ignores what Molitor '637 teaches with respect to layer thickness. This is reason enough to require withdrawal of the rejection.

Claims 1-8 of the '293 patent further require the outer polyurethane layer of the golf ball cover to have a Shore D hardness of 64 or less. As discussed above, the claims require this value to be measured on the ball, rather than on a plaque in isolation. This reflects the fact that it is the synergistic interaction among the various layers of the claimed golf balls that gives rise to the enhanced performance observed in the case of the industry-defining ProV1 balls, which fall within the '293 claims. In the case of Shore D hardness, the hardness, thickness, and composition of the inner cover layer and core can influence the hardness of the thin, soft outer layer.

The Examiner does not offer any evidence as to Shore D hardness of the outer polyurethane layer measured on the ball. On the contrary, he relies upon commercial literature for ESTANE 58133 polyurethane (Exhibit J in the Office Action), which reports a Shore D hardness value measured in isolation on a plaque. This value is not probative of what the value will be when measured on the ball because the construction of the ball influences the latter value. For example, as noted previously, as demonstrated in the '293 patent with ionomers, Iotek 959 material has a Shore D of 66, while Iotek 960 material has a Shore D of 57.[48] When used to construct an outer layer of a golf ball, a 50/50 blend of Iotek 959 and Iotek 960 produced golf balls having an outer layer Shore D value of 73 as measured on the ball, not a Shore D value of approximately 61 that one might expect.[49] Thus, Shore D values measured on a plaque of material are different from and not predictive of Shore D values of a golf ball layer measured on the ball.

---

[47] *See Karsten Mfg'g Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1385 (Fed. Cir. 2001) ("conflicting teachings" of two prior art references "can not reasonably be viewed as suggesting their combination into a [device] having the limitations set forth [in the claims]").
[48] The '293 patent, col. 20, l. 60 to col. 21, l. 16.
[49] Sample #9 and Sample #10 of Table 7 of the '293 patent, col. 19-20.

Whether it would be possible, after the fact, to substitute ESTANE 58133 polyurethane for Nesbitt's ionomer outer cover layer and then measure the Shore D hardness of the polyurethane on that ball is beside the point. It is irrelevant whether this construction inherently would have the requisite Shore D hardness measured on the ball, because the obviousness inquiry focuses at the time that the claimed invention was made and what persons of ordinary skill knew at that time—before Sullivan taught the importance of a multi-piece golf ball and the use of a thin, polyurethane cover layer having a Shore D hardness of 64 or less when measured on the ball. That which is inherent in a hypothetical construction is not necessarily known, and thus cannot provide the requisite motivation for the proposed combination.[50] Again, the proposed combination is obvious only in hindsight.

When scouring the prior art to locate individual claim elements for the purpose of assembling the claimed golf balls, it is easy to lose sight of the big picture. The fact remains that Nesbitt's dual-ionomer ball was known at the time Sullivan made the invention claimed in the '293 patent. Sullivan invented a ball, exemplified by the ProV1 ball, which not only improved upon the Nesbitt dual-ionomer ball, but resulted in a paradigm shift in golf ball design. The Sullivan ball quite simply established a new standard for golf balls. In the highly competitive world of golf ball design, with hundreds of millions of dollars at stake for the winner, the incentive for designing a better golf ball is always present. However, few succeed. The Sullivan ball succeeded and then some. Its success cannot be attributable to simple, obvious material substitutions. Those substitutions are obvious only in hindsight. The Patent Office implicitly recognized this when it allowed the '293 claims over the Nesbitt patent during the original prosecution.

Nesbitt Plus Wu

The rejections of claims 1-8 based upon Nesbitt in combination with Wu are similar to the rejections based upon Nesbitt in combination with Molitor '637, with Wu being used to supply the thin polyurethane layer with a Shore D hardness, measured on

[50] *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) ("[A] retrospective view of inherency is not a substitute for some teaching or suggestion supporting an obviousness rejection"); *In re Spormann*, 363 F.2d 444, 448 (C.C.P.A. 1966) ("That which may be inherent is not necessarily known").

the ball, of 64 or less that Nesbitt indisputably lacks. But Wu is no better than Molitor '637.

Wu describes the use of polyurethane as the cover layer for a ball having a 1-layer cover. Wu further characterizes the polyurethane layer as an alternative to 1-layer covers made of ionomers and balata. Wu itself does not describe anything about the thickness of the polyurethane layer, nor does Wu describe the Shore D hardness of the final molded polyurethane layer when measured on the ball. All Wu says about hardness is that the Shore D value for a precursor polyurethane layer, prior to the final molding step, should be in the range of 10-30, and should be measured on a plaque, rather than the ball.[51] Moreover, when Ms. Wu was asked about her patent's disclosure of the intermediate curing step and whether she could predict what the Shore D hardness of a finished ball would be, she testified: "I cannot predict. This is a process."[52] Ms. Wu also confirmed that her patent does not specify that the finished golf ball is supposed to have any particular Shore D hardness.[53]

The Examiner reiterates that Shore D hardness, thickness, and flex modulus are "mechanical properties" that influence performance, citing the Sullivan paper. After acknowledging the importance of these parameters, the Examiner sets out to find them in Wu. This he cannot do. What he does, instead, is refer to commercial literature (Exhibit C in the Office Action) describing the Titleist 1 ball. The literature states that the Titleist 1 ball includes an "elastomer" cover having a thickness of 0.050 inches and a Shore D hardness of 58. It also lists a number of patents that allegedly cover the ball. The list includes the Wu patent. From this, the Examiner concludes that the Wu patent itself also inherently describes a ball having a polyurethane cover layer with the Shore D hardness value recited in the '293 claims.

The Examiner's reasoning is incorrect. What Wu's claims may cover and what the patent itself actually describes are two different things. In this regard, note that Wu's claim 1 merely describes a ball having a cover made from a particular polyurethane. It says nothing about Shore D hardness, thickness, or flex modulus. Thus, the Wu patent could "cover" a ball like the Titleist 1 ball if all the ball featured was the polyurethane

[51] Wu, col. 6, ll. 26-53.
[52] Wu Deposition, p. 68, ll. 19-24 (Exhibit T).
[53] Wu Deposition, p. 93, ll. 1-4 (Exhibit T).

layer set forth in Wu's claim 1. It would not matter what its thickness, Shore D hardness (measured on the ball), or flex modulus was. The Titleist 1 ball, therefore, is not competent evidence of what the Wu patent discloses, and cannot be used to supply pieces missing from Wu.

The evidence of record fails to establish that Wu's polyurethane layer meets all the properties that the '293 claims require. Therefore, even if Wu could be combined with Nesbitt, the resulting combination would not include all of the limitations of the '293 claims. For this reason alone, the proposed combination of Nesbitt and Wu does not render claims 1-8 obvious.

Even more fundamentally, the Examiner's analysis and reasoning used to justify the combination are flawed. As noted above in the case of the rejections based upon Nesbitt plus Molitor '637, the claimed invention is not the result of simple substitutions of materials. On the contrary, the claimed invention represents a particular combination of features, and the synergistic way in which they interact with each other, that gives rise to surprisingly enhanced performance. Upon commercial introduction, this particular combination of features revolutionized golf ball design and set the standard for ensuing balls. It is not appropriate to work backwards from the claimed balls years later in a misguided attempt to re-assemble the claimed structure by stitching together individual pieces found in various prior art references—particularly where, as here, the prior art references do not, in fact, disclose all of the pieces.

In raising these arguments, we are mindful that a divided Board of Patent Appeals and Interferences ("BPAI"), in an opinion that the BPAI explicitly stated was "not written for publication and is not binding precedent on the Board," rejected claims in a related Sullivan patent application (USSN 09/873,594) over Nesbitt in combination with Wu. The claims at issue in that case, however, are distinguishable from the '293 claims at issue here. For example, the claims at issue in that case, unlike the '293 claims, did not recite an inner cover layer comprising a blend of two or more low acid ionomer resins (claims 1-3) or a particular thickness for the outer polyurethane cover layer (claims 1-3, 5, and 6), nor did they recite a Shore D hardness value for the polyurethane layer, measured on the ball. Therefore, the decision in that case, and accompanying reasoning, are not relevant to the narrower '293 claims.

Nesbitt Plus Molitor '751

Molitor '751 is the third reference upon which the Examiner relies in an attempt to supply the polyurethane piece that Nesbitt lacks. However, just as in the case of Molitor '637 and Wu, Molitor '751 comes up short.

Molitor '751 describes a golf ball having a 1-layer cover made of a blend of polyurethane and ionomer resin that has a Shore C hardness of 70-85, most preferably 72-76. Because the '293 claims recite Shore D, rather than Shore C, hardness, the Examiner must somehow relate Molitor '751's Shore C values to Shore D values. Specifically, he must demonstrate that Shore C values of these ranges necessarily equate to Shore D values of 64 or less when measured on the ball, as the '293 claims require. For this purpose, he first relies upon another Sullivan patent (U.S. Patent No. 6,905,648), and alleges that in this patent Sullivan "admitted" that a Shore C hardness of 73 was equal to a Shore D hardness of 47. He further asserts, without any support, that persons of ordinary skill were aware of a protocol by which Shore C and Shore D values could be correlated. The Examiner describes the protocol at pp. 27, 41, 65-66, and 108 of the Office Action.

The Examiner is mistaken when he alleges that persons of ordinary skill in the field of golf ball design and manufacture were aware that Shore C and Shore D hardness values were related to each other via a simple mathematical correlation. In fact, the opposite is true. One of ordinary skill in the art would be familiar with ASTM D-2240, the standard that defines how to measure Shore C and Shore D hardness. This standard specifically prohibits "translating" one type of Shore hardness into another:[54]

> *The geometry of the indentor and the applied force influence the measurements such that no simple relationship exists between the measurements obtained with one type of durometer and those obtained with another type of durometer or other instruments used for measuring hardness.* This test method is an empirical test intended primarily for control purposes. No simple relationship exists between indentation hardness determined by this test method and any fundamental property of the material tested.

[54] Wilkes Declaration, ¶ 56 (Exhibit D; quoting ASTM D-2240, which is Exhibit 2 thereto).

Given this unequivocal warning, a person of skill in the art would understand that Shore C and Shore D hardnesses cannot be correlated by any formula.[55]

A person of ordinary skill in the field of golf ball design at the time of the Sullivan '293 invention would not have been motivated, based upon Molitor '751's Shore C values characteristic of a 1-layer cover, to design a golf ball having, as the outer cover layer in a 2-layer cover, a polyurethane layer with a Shore D hardness of 64 or less. Such a person, reading Molitor '751, would have known that no simple correlation existed between Shore C and Shore D hardness values. Therefore, Molitor '751's Shore C values would have told him nothing particular regarding Shore D values, and could not have provided the requisite motivation to substitute Molitor '751's polyurethane/ionomer blend for the ionomer layer that Nesbitt used as the outer cover layer in his multi-layer golf balls.

Molitor '751 also provides no motivation to combine his polyurethane/ionomer blend with a low acid ionomer-containing inner cover layer having a Shore D hardness of at least 60, which the '293 claims require. Although Molitor '751 states that the blend could be used as the cover in a golf ball construction, the only example of such a construction that Molitor '751 actually provides is very different from the construction set forth in the '293 claims. Specifically, Molitor '751 discloses that a cover including the polyurethane/ionomer blend could be combined with a ball featuring a hard core and a soft core layer overlying the hard core. Molitor '751 characterizes this core layer as having a thickness of 0.2 inches and a Shore A hardness of about 35.[56] This layer is at least twice as thick as the inner low acid ionomer set forth in claims 1, 2, 3, 5, and 6 of the '293 patent, and is orders of magnitude softer than the ionomer layer set forth in claims 1-8. Therefore, to the extent Molitor '751 suggests to include his polyurethane/ionomer blend in a golf ball having a core and multiple layers over the core, it is in a ball having a very different structure and properties from the claimed balls. Accordingly, it cannot support the obviousness rejections that the Examiner proposes.

For at least these reasons, claims 1-8, therefore, would not have been obvious over Nesbitt in combination with Molitor '751, and the rejections should be withdrawn.

---

[55] Wilkes Declaration ¶ 56 (Exhibit D).
[56] Molitor '751, col. 6, ll. 14-31.

Rejections Based Upon Proudfit

Claims 1, 2, 4, 5, 7, and 8 stand rejected under 35 U.S.C. § 103 over Proudfit in combination with (a) Molitor '637, (b) Wu, or (c) Molitor '751.

Proudfit plus Molitor '637

Proudfit describes a ball having a 2-layer cover that includes a relatively hard, inner ionomer layer and a relatively soft, outer layer made of polymeric material. Proudfit specifically describes the use of balata, or blend thereof, for the outer layer, and further describes the outer layer as having a thickness between 0.0450 and 0.0650 inches, preferably about 0.0525 inch. Proudfit does not describe the use of polyurethanes as the outer layer.

The Examiner's rejection may be summarized as follows: Proudfit describes a golf ball with a two-layer cover having the properties (Shore D hardness/thickness/flex modulus) recited in the '293 claims. According to the Examiner, the only difference between Proudfit and the '293 claims is that Proudfit does not describe using polyurethane as the outer cover layer of the golf ball. However, because it is mechanical properties, rather than chemical composition, that determine golf ball performance, it would have been obvious to substitute a polyurethane layer having the Shore D hardness/flex modulus/thickness recited in the '293 claims for the relatively soft balata layer used in Proudfit's outer cover, which also exhibited the properties recited in the claims. Molitor '637 describes such a polyurethane. Therefore, it would have been obvious to combine Proudfit with Molitor '637.

The rejection cannot stand because, as a preliminary matter, the assumptions underlying it are false. In particular, it is not true, as the Examiner asserts, that Proudfit describes a golf ball with an outer layer that meets the limitations (Shore D hardness/thickness/flex modulus) recited in the '293 claims, nor is it true that Molitor '637 describes such a layer.[57]

[57] Proudfit also fails to describe an inner cover layer having the properties recited in the '293 claims. The Examiner's conclusion to the contrary is predicated on a belief that (a) Proudfit incorporates U.S. Patent No. 4,690,981 by reference and (b) the trade name SURLYN necessarily denotes a low acid ionomer. Neither is true. Proudfit merely describes the '981 patent in the Background section, without incorporating

First, the Examiner argues that Proudfit's balata layer inherently has a Shore D value of 64 or less, as recited in the '293 claims. To do this, he relies upon a declaration from Hebert that the Requestor, Acushnet, submitted. Hebert is the Senior Manager of Product Development for Acushnet. Acushnet currently is the defendant in a $100 million+ litigation involving the '293 patent. Hebert's statements, therefore, necessarily must be viewed with suspicion.

The Hebert declaration describes an analysis of the Wilson Ultra Tour Balata golf ball that Acushnet performed in 1993.[58] The analytical report merely states, with respect to the golf ball cover, that it includes "c-polybutadiene" as its "primary component" and "synthetic balata" as the "other polymer," and additionally states that the cover had a "hardness" of 52. The report provides no further details regarding the chemical composition of the cover, nor does it describe how the hardness was measured. For that matter, it does not even state whether "hardness" referred to Shore A, Shore B, Shore C, Shore D, or some other measure. In fact, when Mr. Hebert was asked if he was sure the reported hardness values were Shore D hardness values, he testified: "Not with absolute certainty."[59]

The Examiner alleges that the Wilson ball is representative of a ball having the properties disclosed in the Proudfit patent. In particular, he points to Table 7 of Proudfit, which describes a specific composition for the outer cover layer that includes "Trans PolyIsoprene (TP-301)" and "Polybutadiene," as well as a number of additional ingredients. He reasons that because Wilson is the assignee of the Proudfit patent, and because (a) trans polyisoprene is the chemical name for synthetic balata and (b) polybutadiene is "one of the first types of synthetic rubber or elastomer," the Wilson ball discussed in the Hebert declaration is representative of the golf ball cover disclosed in the Proudfit patent.[60] From that he concludes that the balata cover layer of the ball described

---

it by reference. Proudfit, col. 1, ll. 40-43. In addition, the trade name SURLYN does not denote a single composition, let alone a low acid ionomer. Rather, it denotes a family of ionomer compositions, not all of which are low acid ionomers. [*See* "Product Information: Surlyn Thermoplastic Resins," included as Exhibit I to Acushnet's petition for reexamination of the '293 patent.]

[58] The report actually refers to two Ultra Tour balls (the 90 and the 100). However, it includes a chemical analysis only for the 100 ball.

[59] Hebert Deposition, p. 224, l. 20 to p. 225, l. 2 (Exhibit X).

[60] The Examiner's reasoning may be based on statements in Hebert's declaration about the Proudfit patent and the Wilson Ultra Tour Balata golf ball. During Mr. Hebert's deposition, however, he testified that he did not write his declaration, that he just perused the Proudfit claims at a quick glance, and that he does not

in the Proudfit patent inherently had a Shore D hardness of 64 or less, as the claims of the '293 patent require.

The Examiner's reasoning is wrong for a number of reasons.

First, one cannot conclude that the Wilson ball discussed in the Hebert declaration is representative of the balls disclosed in the Proudfit patent. The analytical report provides very few details regarding the composition, including amounts of the two named polymers, and the amounts and identities of any other ingredients. Thus, it simply is not reasonable to conclude that this composition is representative of the golf balls described generally in Proudfit, and in Table 7 in particular.

Second, neither the Hebert declaration nor the analytical report describes how hardness was measured. For that matter, the analytical report merely refers to "hardness," without stating whether it is Shore A, Shore B, Shore D, Shore C, or some other measure. Moreover, neither provides any clue as to whether measurements were made on the ball or not, as the '293 claims require. This evidence is deficient, as a matter of law, to establish that Proudfit's balata outer layer had a Shore D hardness value, measured on the ball, that the '293 claims require.

Third, we note that just as in the case of the Wu patent, whether Proudfit's claims would cover the Wilson ball is irrelevant. What Proudfit's claims cover and what Proudfit discloses are two separate issues. The Wilson ball is not competent evidence of what the Proudfit patent discloses, and cannot be used to supply pieces missing from Proudfit.

The Examiner's failure to prove that Proudfit's inner and outer cover layers have the properties recited in the '293 claims is, by itself, fatal to the rejection. However, even if Proudfit did describe inner and outer cover layers having the properties recited in the '293 claims, it still would not have been obvious to substitute Molitor '637's polyurethane layer for Proudfit's balata layer.

The arguments presented above with respect to the rejection based upon Nesbitt plus Molitor '637 apply equally here. In particular, we note that the combination the Examiner proposes, as with the Nesbitt/Molitor '637 combination, ignores what Molitor

---

feel qualified to tell the patent office anything from a legal standpoint. Specifically, he testified that "I just wanted to provide the information to the patent office that I had measured." Hebert Deposition, p. 231, l. 6 to p. 237, l. 16 (Exhibit X).

'637 discloses regarding the thickness of the cover layer. Specifically, Molitor '637 discloses single cover layers having a thickness of 0.09 to 0.125 inches, and further states that layers thinner than 0.06 inches cannot be manufactured. On the other hand, Proudfit states that the outer layer should have a thickness between 0.0450 and 0.0650 inches, and preferably about 0.0525 inches. Proudfit's layer, therefore, is significantly thinner than Molitor 637's layer. In fact, almost the entire range is below the 0.060 inch thickness that Molitor '637 says is the lower limit for layer thickness. Proudfit and Molitor '637, therefore, cannot be combined. The Examiner is not free to ignore what the two references teach with respect to thickness, especially after repeatedly identifying thickness throughout the Office Action as one of the physical properties that determines golf ball performance. Molitor 637's disclosure regarding thickness would actually teach away from substituting Molitor '637's polyurethane for Proudfit's balata layer.

Rather than attempting to reconstruct the claimed invention piecemeal, it is important to step back and consider the big picture. The fact remains that the inventor developed a ball, exemplified by the Titleist ProV1, that was a commercial blockbuster that experts praised and that established a new standard for golf ball performance. It was not a matter of simple, obvious material substitutions. Those substitutions are obvious only in hindsight.

Proudfit plus Wu

The rejections based upon Proudfit plus Wu are premised on the same assumptions as the rejections based upon Proudfit plus Molitor '637, i.e., that Proudfit discloses a ball having all the properties (Shore D hardness/thickness/flex modulus) disclosed in the '293 claims, and lacks only a polyurethane outer layer. As discussed above, the premise is false. Moreover, Wu, just like Molitor '637, cannot cure these deficiencies.

Wu describes the use of polyurethane as the cover layer for a ball having a 1-layer cover. Wu itself does not describe anything about the thickness of the polyurethane layer, nor does Wu describe the Shore D hardness of the final molded polyurethane layer when measured on the ball. All Wu says about hardness is that the Shore D value for an intermediate polyurethane layer, prior to the final molding step, should be in the range of

10-30, and should be measured on a plaque, rather than the ball.[61] Moreover, when Ms. Wu was asked about her patent's disclosure of the intermediate curing step and whether she could predict what the Shore D hardness of a finished ball would be, she testified: "I cannot predict. This is a process."[62] Ms. Wu also confirmed that her patent does not specify that the finished golf ball is supposed to have any particular Shore D hardness.[63] Wu also discloses nothing regarding the flex modulus of the polyurethane.

As discussed above in the context of the rejections based upon Nesbitt and Wu, the Examiner fails to prove that Wu's golf balls have the Shore D hardness values that the '293 claims require. The Titleist 1 ball is not competent evidence of what the Wu patent discloses, and cannot be used to supply pieces missing from Wu. With respect to the flex modulus of the polyurethane, the Examiner relies upon the Dalton declaration that the Requestor (Acushnet) submitted to establish that Wu's polyurethane inherently had a flex modulus falling within the claimed range (1,000 to 30,000 psi). Dalton is the Vice President of Product Development for Acushnet. Acushnet currently is the defendant in a $100 million+ litigation involving the '293 patent. Dalton's statements, therefore, necessarily must be viewed with suspicion.

The Dalton declaration merely states that Dalton is "familiar" with the polyurethane material described in Example 1 of Wu. Dalton then baldly asserts that this same material was used on the Titleist Professional golf ball from 1993-2002. Dalton offers no further support for this point. He then states, again without any additional support, that Wu's Example 1 had a "flexural modulus of about 23,000 psi when tested according to ASTM standards." The Dalton declaration is simply not competent evidence with respect to the properties of Wu's polyurethane.

Therefore, even if Wu could be combined with Proudfit, the resulting combination would not have all the features that the '293 claims require. This reason alone precludes the rejections based upon Proudfit plus Wu.

Even more fundamentally, the justification that the Examiner supplies for making the combination is flawed. The Examiner asserts that if two materials have similar properties, and thus could have been substituted for one another, it necessarily would

[61] Wu, col. 6, ll. 26-53.
[62] Wu Deposition, p. 68, ll. 19-24 (Exhibit T).
[63] Wu Deposition, p. 93, ll. 1-4 (Exhibit T).

have been obvious to make the substitution. This reasoning cannot suffice, as a matter of law, to support an obviousness rejection. The issue is not whether a substitution could have been made. Rather, the issue is whether a person of ordinary skill would have been motivated to make the substitution at all.[64] Here, there is no motivation to substitute Wu's polyurethane layer for Proudfit's balata layer, absent hindsight. Moreover, under the Examiner's reasoning, one would expect the combination to produce a ball having properties similar to those of the original ball because the proposed substitution involved materials allegedly having similar properties. That clearly is not what happened here with the claimed balls. The dramatically enhanced performance, and resounding commercial success, of the industry-dominating Pro V1 balls belies the Examiner's thesis, and compels withdrawal of the rejections.

Proudfit plus Molitor '751

Like Molitor '637 and Wu, Molitor '751 fails to supply the elements missing from Proudfit. Molitor '751 describes a golf ball having a 1-layer cover made of a blend of polyurethane and ionomer resin that has a Shore C hardness of 70-85, most preferably 72-76. For the reasons discussed above in the context of the rejections based upon Nesbitt and Molitor '751, a person of ordinary skill reading Molitor '751's disclosure of Shore C values would not have been able to correlate these values with the Shore D values that the '293 claims require. Therefore, Molitor '751's Shore C values would have told the ordinary skilled artisan nothing regarding Shore D values, and could not have provided the requisite motivation to substitute Molitor '751's polyurethane/ionomer blend for the balata layer that Proudfit used as the outer cover layer in his golf balls.

Furthermore, to the extent Molitor '751 suggests to include his polyurethane/ionomer blend in a golf ball having a core and multi-layer cover, it is in a ball having a very different structure and properties from the claimed balls—specifically, a ball in which a soft, thick layer lies between the core and the polyurethane/ionomer blend outer cover layer. This would not have motivated a person of ordinary skill to

[64] *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) (holding that the USPTO failed to establish a *prima facie* case of obviousness; "The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.").

combine a polyurethane layer with the hard, inner ionomer layer overlying the golf ball core that the '293 claims specify.

For at least these reasons, claims 1, 2, 4, 5, 7 and 8, therefore, would not have been obvious over Proudfit in combination with Molitor '751, and the rejections should be withdrawn.

CONCLUSION

For the foregoing reasons, claims 1-8 of the '293 patent are patentable over the cited references. Accordingly, Patent Owner, Callaway Golf, requests prompt issuance of a Certificate of Reexamination confirming the validity of claims 1-8.

The Director is authorized to charge any fees or credit any overpayments to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 4/27/07

Dorothy P. Whelan (Reg. No. 33,814)
J. Patrick Finn III (Reg. No. 44,109)

Fish & Richardson P.C.
60 South Sixth Street, Suite 3300
Minneapolis, MN 55402
Telephone: (612) 335-5070
Facsimile: (612) 288-9696

60421058.doc

Attorney's Docket No.	Express Mail Label No.	Mailing Date	*For PTO Use Only*
16656-001RX1	EV468465860US	April 27, 2007	*Do Not Mark in This Area*
Control No.	Filing Date	Attorney/Secretary Init	
95/000,120	January 17, 2006	DPW/JXF/jaw	
Title of the Invention Multi-Layer Golf Ball			
Applicant Michael J. Sullivan			
Patent No. 6,210,293			
Enclosures •Response to Office Action mailed February 27, 2007 (30 pages) w/Exhibits A-X •Certification Under 37 CFR 1.903 (1 page) FR			

EV 468465860 US

Mailing Label
Label 11-F June 2002

EXPRESS MAIL
UNITED STATES POSTAL SERVICE®

Post Office To Addressee

ORIGIN (POSTAL USE ONLY)			
PO ZIP Code	Day of Delivery ☐ Next ☐ Second	Flat Rate Envelope ☐	
Date In Mo. Day Year	☐ 12 Noon ☐ 3 PM	Postage $	
Time In ☐ AM ☐ PM	Military ☐ 2nd Day ☐ 3rd Day	Return Receipt Fee	
Weight lbs. ozs.	Int'l Alpha Country Code	COD Fee	Insurance Fee
No Delivery ☐ Weekend ☐ Holiday	Acceptance Clerk Initials	Total Postage & Fees $	

DELIVERY (POSTAL USE ONLY)		
Delivery Attempt Mo. Day	Time ☐ AM ☐ PM	Employee Signature
Delivery Attempt Mo. Day	Time ☐ AM ☐ PM	Employee Signature
Delivery Date Mo. Day	Time ☐ AM ☐ PM	Employee Signature

☐ WAIVER OF SIGNATURE (Domestic Only) Additional merchandise insurance is void if waiver of signature is requested. I wish delivery to be made without obtaining signature of addressee or addressee's agent (if delivery employee judges that article can be left in secure location) and I authorize that delivery employee's signature constitutes valid proof of delivery.
NO DELIVERY ☐ Weekend ☐ Holiday
Customer Signature

CUSTOMER USE ONLY
METHOD OF PAYMENT:
Express Mail Corporate Acct. No.

Federal Agency Acct. No. or Postal Service Acct. No.

FROM: (PLEASE PRINT) PHONE 612 335 5070

FISH & RICHARDSON
60 S 6TH ST STE 3300
MINNEAPOLIS MN 55402-5631

JXF/jacd 16056-99 1ex1
control # 95/000,120

TO: (PLEASE PRINT) PHONE

Attn: Central Reexam Unit
MAIL STOP Inter Partes Reexam
COMMISSIONER FOR PATENTS
PO BOX 1450
ALEXANDRIA VA 22313-1450

PRESS HARD.
You are making 3 copies.
FOR PICKUP OR TRACKING CALL 1-800-222-1811 www.usps.com

881/ 1000 F:02 T:12